UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,935	03/09/2007	Ki-Hyun Kim	0001.1182	6786

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EXAMINER
ABRAHAM, ESAW T

ART UNIT	PAPER NUMBER
2112	

MAIL DATE	DELIVERY MODE
09/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/580,935	KIM ET AL.
	Examiner	**Art Unit**	
	ESAW T. ABRAHAM	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2006*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☐ Claim(s) _____ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☒ Claim(s) *1-16* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Election / Restriction

1.   Restriction to one of the following invention is required under 35 U.S.C. 121

GROUP I   Claims **1-7, 13 and 14** drawn to: An interleaving method for use in low

density parity check (LDPC) encoding process employed by a network

including a communication channel across which data is transmitted

and/or in a recording/ reproducing apparatus when information is stored

on a recording medium, the method comprising generating more than one

code word vector by generating parity information based on a parity check

matrix; dividing the generated code word vector into interleaving units,

each interleaving unit having a size that is based on determined lengths

between 1s included in a row of the parity check matrix; and interleaving

the more than one code word vector using the differently sized

interleaving units (as in claim 1) are also classified in 714/752.

GROUP II   Claims **8-12, 15 and 16** drawn to: A method of determining a size of an

interleaving unit in an low density parity check (LDPC) encoding process

employed by a network including a communication channel across which

data is transmitted and/or in a recording/reproducing apparatus when

information is stored on a recording medium, the method comprising

extracting valid code word bits which represents code word bits

corresponding to 1s in a row of a parity check matrix in a code word

vector; extracting bit lengths between the valid code word bits in the code word vector; and determining the size of the interleaving unit based on the bit lengths between the valid code word bits (as in claim 8) classified in 714/762.

The inventions are distinct, each from the other because of the following reasons: Invention GROUP I and GROUP II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable.

In the instance case, invention GROUP I has separate utility separate utility such as *"generating more than one code word vector by generating parity information based on a parity check matrix; dividing the generated code word vector into interleaving units, each interleaving unit having a size that is based on determined lengths between 1s included in a row of the parity check matrix; and interleaving the more than one code word vector using the differently sized interleaving units"*.

In the instant case, the invention of GROUP II has separate utility such as *"extracting valid code word bits which represents code word bits corresponding to 1s in a row of a parity check matrix in a code word vector; extracting bit lengths between the valid code word bits in the code word vector; and determining the size of the interleaving unit based on the bit lengths between the valid code word bits"*. See MPEP 806.05(d).

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and

there would be a serious search and examination burden if restriction were not required

because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their

different classification;

(b) the inventions have acquired a separate status in the art due to their recognized

divergent subject matter;

(c) the inventions require a different field of search (for example, searching

different classes/subclasses or electronic resources, or employing different search

queries);

(d) the prior art applicable to one invention would not likely be applicable to

another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C.

101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must

include (i) an election of an invention to be examined even though the requirement may

be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the

elected invention.

The election of an invention may be made with or without traverse. To reserve a

right to petition, the election must be made with traverse. If the reply does not distinctly

and specifically point out supposed errors in the restriction requirement, the election shall

be treated as an election without traverse. Traversal must be presented at the time of

election in order to be considered timely. Failure to timely traverse the requirement will

result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention. Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case.

In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention. Applicant is reminded that upon cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the specification. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

2.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Esaw T. Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8am-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EA/

/Esaw T Abraham/

Examiner, Art Unit 2112

09/26/08